REMARKS

Status of Claims

Claims 1 – 10, 18 and 19 are pending. Clams 11 – 17 have been canceled without prejudice for possible presentation in a divisional application.

Claims 1, 2, 18 and 19 are the only independent claims.

Claim Objections

The Examiner objected to the status identifiers of the claims. The claims presented in the October 26, 2006 Preliminary Amendment were marked with status identifiers relative to amendments made in the PCT international phase, i.e., claims 1 -19 presented in the October 27, 2006 Preliminary Amendment were the claims as amended in the international stage. As such, these claims 1 – 19 presented in the October 27, 2006 Preliminary Amendment were "original" claims with respect to the present U.S. national phase application.

All pending claims have been amended herein and are marked "Currently Amended." It is respectfully submitted that the status identifiers are now correct. Withdrawal of the objection is respectfully requested.

35 USC 112, Second Paragraph

Claims 4, 7, and 19 have been amended as suggested by the Examiner to overcome the 35 USC 112 rejections. It is respectfully submitted that all pending claims are now fully definite in accordance with 35 USC 112, second paragraph.

35 USC 102 / 103

It is respectfully submitted that Tojo does not disclose or suggest the claimed invention. The objective of the presently claimed invention is to control a refrigeration system, *without making use of a reference of the refrigeration system itself.* The presently claimed system increases or decreases the amplitude of the piston according the variation in the load. This variation of the load is detected by the variation of the resonance frequency of the system, and the voltage is then adjusted to control the amplitude of the piston range.

This is exactly what is recited in the pending claims, i.e., what triggers the control of the piston amplitude is the *change in the resonance frequency of the system*, not an

external variable as disclosed in Tojo and the other documents of record.

In contrast to the presently claimed development, Tojo seeks to control to the pistons range by a sinusoidal reference (A.sen(wt)), while the present invention only has the objective of controlling the amplitude of the piston without the need of an external reference. Further, Tojo tries to control the shape of the current wave by means of the shape of the wave of the speed of the piston, instead of the sinusoidal shape of the tension applied to the motor.

With respect to Yoo, this document proposes a method of adjustment of the resonance frequency by means of phase between the current and position, to promote a constant amplitude of the pistons dislocation.

Yoshida also discloses a method to adjust the resonance frequency and demands an input of an external reference for the pistons dislocation.

Dorman cannot overcome the deficiencies of Tojo, Yoshida et al. or Yoo et al.

For example, present claim 1 recites, ". . . the processing unit (22) selectively increasing or decreasing the displacement range in a proportional manner to the variations of the resonance frequency throughout the load variations and to dynamically keep the resonant assembly in resonance."

Present claim 2 recites ". . . wherein the processing unit (22) adjusts a range of piston displacement so that the linear compressor (100) will be dynamically kept in resonance throughout the variations in demand of the cooling system, the control of the pistons displacement being made by means of the controlled voltage (V_M) that is adjusted by means of a variable frequency inverter, the inverter *dynamically adjusting the voltage frequency (f_{VM}) of the controlled voltage (V_M) to a value equal to the value of the resonance frequency of the linear compressor (100), as the variations in demand of the cooling system (20) occur . . . .*"

Similarly, present claim 18 recites ". . . the displacement is adjusted through the controlled voltage (V_M) by means of a variable frequency inverter, *the inverter dynamically adjusting the voltage frequency of the controlled voltage (V_M) to a value equal to the resonance frequency of the linear compressor (100), as the variations in demand of the cooling system (20) occur.*"

Present claim 19 recites ". . . the processing unit (22) measuring the difference between the feed phase (ϕ_C) and the dynamic phase (ϕ_P) and establishing a measured phase (ϕ_{PC}), the processing unit (22) adjusting the controlled voltage (V_M) so that the value of the measured phase (ϕ_{PC}) will be null; *the displacement being adjusted through the controlled voltage (V_M) by means of a variable frequency inverter, the inverter dynamically adjusting the voltage frequency of the controlled voltage (V_M) to a value equal to the resonance frequency of the linear compressor (100), as the variations in demand of the cooling system (20) occur.*"

Neither Tojo nor Yoo et al. or Yoshida et al. nor Dormam discloses or fairly suggests these features. As noted above, Tojo and the other documents of record require use of *an external variable instead of altering piston displacement based upon a change in the resonance frequency of the system itself as presently claimed*.

Conclusion

Based upon the above amendments and remarks, it is respectfully submitted that all claims are now in condition for allowance and that this application meets all other statutory requirements. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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